

Serial No. 10/721,582

PATENT

CLAIM AMENDMENTS

1 1. (Currently Amended) An expandable implantable valve prosthesis,
 2 comprising:
 3 a support frame supporting one or more leaflets, each leaflet
 4 comprising a biomaterial, the support frame and the one or more leaflets
 5 together functioning as a valve to restrict blood flow in a first direction
 6 when implanted in the vascular vessel; and
 7 wherein the biomaterial is folded over the support frame and
 8 attached to itself thereby securing the one or more leaflets to the support
 9 frame such that the wall-engaging outer edge of each of the one or more
 10 leaflets comprises a folded edge of the biomaterial carried by at least a
 11 portion of the support frame thereinside; and
 12 wherein, each of the one or more leaflets extend inward from the
 13 wall-engaging outer edge to form the valve.

Claims 2 and 3. (Withdrawn)

Claims 4-6. (Canceled)

1 7. (Currently Amended) An implantable valve prosthesis, comprising:
 2 a support frame supporting one or more leaflets, each comprising
 3 a biomaterial, the one or more leaflets including a body, an inner edge,
 4 and an outer edge;
 5 wherein the support frame and the one or more leaflets together
 6 function as a valve to restrict blood flow in a first direction when
 7 implanted in the vascular vessel; and
 8 wherein the outer edge of the biomaterial comprising the one or
 9 more leaflets is folded over the support frame with the outer edge or
 10 portion adjacent thereto being attached to the leaflet body by a non-
 11 suturing method that include at least one of the group consisting of

Serial No. 10/721,582

PATENT

12 ~~cross-linking agents, adhesives, pressure welding, crimping, and~~ heat
 13 welding, thereby securing the one or more leaflets to the support frame;
 14 and
 15 wherein the folded outer edge of the one or more leaflets
 16 resiliently engages the wall of the vessel when implanted therein.

Claims 8-10. (Canceled)

Claim 11. (Withdrawn)

Claims 12 and 13. (Canceled)

1 14. (New) An expandable implantable valve prosthesis, comprising:
 2 a plurality of leaflets of a biomaterial that include a body portion
 3 and a outer edge configured to engage the walls of a vessel, the wall-
 4 engaging outer edge further comprising a folded portion of the
 5 biomaterial extending along the wall-engaging outer edge, the folded
 6 portion being formed by the attachment of biomaterial to itself by a
 7 series of heat welds positioned therealong.

1 15. (New) The valve prosthesis of claim 14, wherein the wall-engaging
 2 outer edge further includes a support frame enclosed by the folded
 3 portion of the biomaterial, wherein the support frame resiliently urges
 4 the outer edge against the walls of vessel.

1 16. (New) The valve prosthesis of claim 14, wherein the biomaterial
 2 comprises a remodelable material.

1 17. (New) The valve prosthesis of claim 14, wherein the remodelable
 2 material comprises an submucosa.

Serial No. 10/721,582

PATENT

1 18. (New) A method of manufacturing an implantable valve prosthesis,
2 comprising the steps of.
3 providing a flexible biomaterial;
4 providing a support frame comprising one or more struts
5 configured to extend along and resiliently engage the walls of the vessel
6 and carry a wall-engaging outer edge of one or more leaflets when the
7 valve prosthesis is implanted therein;
8 placing the flexible biomaterial against the support frame such that
9 an overhang portion thereof extends beyond the one or more struts ;
10 folding the overhang portion of the flexible biomaterial over the
11 one or more struts, generally enclosing the one or more struts within the
12 folded edge portion; and
13 welding the overhang portion back to the flexible biomaterial to
14 form the one or more leaflets and to secure each to the one or more
15 struts enclosed therein such that folded edge portion comprises the wall-
16 engaging outer edge of the one or more leaflets.

1 19. (New) The method of claim 18, wherein the overhang portion is
2 welded using heat.

1 20. (New) The method of claims 18, wherein the overhang portion is
2 welded using pressure.

1 21. (New) The valve prosthesis of claim x, wherein the overhang portion
2 further includes a skirt portion.

1 22. (New) The valve prosthesis of claim 1, wherein the fixation
2 comprises a heat weld.

1 23. (New) The valve prosthesis of claim 1, wherein the fixation
2 comprises a pressure weld.

Serial No. 10/721,582

PATENT

1 24. (New) The valve prosthesis of claim 1, wherein the biomaterial
2 comprises a remodelable material.

1 25. (New) the valve prosthesis of claim 24, wherein the remodelable
2 material comprises submucosa.